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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,233	03/29/2004	Robert Schweitzer	E2079-00007	2317
41396	7590	10/06/2005	EXAMINER	
DUANE MORRIS LLP IP DEPARTMENT 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103-4196			CHERRY, STEPHEN J	
			ART UNIT	PAPER NUMBER
			2863	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/812,233

Applicant(s)

SCHWEITZER ET AL.

Examiner

Stephen J. Cherry

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9-16-2004</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to because figure 3 is unclear and should be presented in line form. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

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The abstract of the disclosure is objected to because it is too long. The length of the abstract should be limited to 150 words. Correction is required.

See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Magnification such that each mixture spectrum has varying percentages of pure components represented in the spectrum and spatial resolution not so low that the spectra are identical are critical or essential to the practice of the invention, but not included in the claims is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). In the specification, at page 11, line 16, it is explicitly stated that the magnification must be such that each mixture spectrum collected has varying percentages of the pure components, and at page 12, line 2, the specification states that the spatial resolution must not be so low that the spectra are identical; however, these limitations are not found in each of the claims.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims recite, calculating "for each of the top y ranked library spectra". It is not clear from the context of the claims whether the intended scope of the claims require calculating for the top one or more spectra, or for the top plurality of spectra.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims are 1, 2, 14, 15, 16, 18, 20, 21, 22, 26 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication 20040024539 to Gard et al.

Claim 1 recites, as disclosed by Gard:

1. A method of identifying components of a mixture, said method comprising the steps of:

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obtaining a set of spectral data for a mixture, the set of spectral data defining a mixture data space ('539, par. 23 and par. 5, "complex mixture");

ranking a plurality of library spectra of known elements according to their angle of projection into the mixture data space ('539, par 27-28);

calculating a corrected correlation coefficient for each combination of the top y ranked library spectra ('539, par 28, result of similarity scores); and

selecting the combination having the highest corrected correlation coefficient, wherein the known elements of the selected combination are identified as the components of the mixture ('539, par. 29-30).

Claim 2 recites, as disclosed by Gard:

2. The method of claim 1, wherein the plurality of library spectra of known elements are ranked using target factor testing techniques ('539, par 27-28).

Claim 14 recites, as disclosed by Gard:

14. The method of claim 1, where the plurality of library spectra of known elements are ranked according to their angle of projection ('539, par. 27, "dot product") into the mixture data space, from smallest to largest ('539, par. 28).

Claim 15 recites, as disclosed by Gard:

15. The method of claim 1, further comprising the step of correcting the set of spectral data to remove signals and information not due to the chemical composition of the mixture ('539, par. 25).

Claim 16 recites, as disclosed by Gard:

16. The method of claim 1, further comprising the steps of: obtaining, at a later point in time ('539, par. 19 describes repeated operation), another set of spectral data for the mixture, such that the another set of spectral data is separated from the set of spectral data by a time interval, the another set of spectral data defining another mixture data space ('539, par. 23 and par. 5, "complex mixture"); ranking a plurality of library spectra of known elements according to their angle of projection into the another mixture data space ("539, par 27-28); calculating a corrected correlation coefficient for each combination of the top y ranked library spectra ("539, par 28, result of similarity scores); and selecting the combination having the highest corrected correlation coefficient, wherein the known elements of the selected combination are identified as the components of the mixture at the later point in time (539, par. 29-30).

Claim 18 recites, as disclosed by Gard:

18. The method of claim 1, wherein the set of spectral data comprises a plurality of spectral data sets obtained from the mixture

at different points in time ('539, par. 19 describes repeated operation).

Claim 20 recites, as disclosed by Gard:

20. A method of identifying components of a mixture from a set of spectral data obtained from the mixture and defining a mixture data space, said method comprising the steps of: ranking, based on the set of spectral data, a plurality of library spectra of known elements according to their likelihood of being a component of the mixture, from most likely to least likely ('539, par. 27-28); calculating a ranking criterion for each combination of the top y ranked library spectra ('539, par. 28, result of similarity scores); and selecting a combination based on the ranking criterion, wherein the known elements of the selected combination are identified as the components of the mixture ('539, par. 28-29).

Claim 21 recites, as disclosed by Gard:

21. The method of claim 20, where the plurality of library spectra are ranked according to their angle of projection into the mixture data space ('539, par. 27, "dot product").

Claim 22 recites, as disclosed by Gard:

22. The method of claim 20, wherein the ranking criterion comprises a corrected correlation inefficient, and wherein the step of selecting a combination based on the ranking criterion comprises the step of selecting the combination having the highest corrected



correlation coefficient, wherein the known elements of the selected combination are identified as the components of the mixture.

Claim 26 recites, as disclosed by Gard:

26. The method of claim 20, further comprising the steps of: obtaining, at a later point in time ('539, par. 19 describes repeated operation), another set of spectral data from the mixture, such that the another set of spectral data is separated from the set of spectral data by a time interval, the another set of spectral data defining another mixture data space ('539, par. 23 and par. 5, "complex mixture"); ranking, based on the another set of spectral data, a plurality of library spectral of known elements according to their likelihood of being a component of the mixture, from most likely to least likely ('539, par 27-28); calculating a ranking criterion for each combination of the top y ranked library spectra ('539, par 28, result of similarity scores); and selecting a combination based on the ranking criterion, wherein the known elements of the selected combination are identified as the components of the mixture at the later point in time ('539, par. 28-29).

Claim 28 recites, as disclosed by Gard:

28. The method of claim 26, wherein the ranking criterion comprises a corrected correlation coefficient, and wherein the step of selecting a combination

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based on the ranking criterion comprises the step of selecting the combination having the highest corrected correlation coefficient, wherein the known elements of the selected combination are identified as the components of the mixture ('539, par. 28-29).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 17, 19, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 20040024539 to Gard et al. in view of U.S. Patent 6,490,530 to Wyatt.

The claims describe, as disclosed by Gard:

obtaining a set of spectral data for a mixture, the set of spectral data defining a mixture data space ('539, par. 23 and par. 5, "complex mixture");

ranking a plurality of library spectra of known elements according to their angle of projection into the mixture data space ('539, par 27-28);

calculating a corrected correlation coefficient for each combination of the top y ranked library spectra ('539, par 28, result of similarity scores); and  
selecting the combination having the highest corrected correlation coefficient, wherein the known elements of the selected combination are identified as the components of the mixture ('539, par. 29-30).

However, Gard does not disclose analyzing trends over time, or obtaining data from different locations in a mixture.

The claims further recite analyzing data from different locations and establish trends in composition, as disclosed by Wyatt ('530, figures 3-4, and col. 13, line 36).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data collection and analysis of Wyatt with the invention of Gard to allow the monitoring of the progress and composition of hazardous threats to assess health hazard.

### ***Allowable Subject Matter***

Although all of the claims are rejected under 35 U.S.C. 112, as described above, claims 3-13, and 23-25 recite features that, in combination with the remaining claimed structure avoids the prior art of record.

### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Cherry whose telephone number is (571) 272-2272. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJC

  
MICHAEL NGHIEM  
PRIMARY EXAMINER